

## How to Count Atoms - Review

The symbol is one atom

Ca 1 atom

A subscript gives the number of atoms

N<sub>2</sub> 2 atoms

A subscript outside the bracket is multiplied by all the elements inside

Ba<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub>

3 atoms of Ba Ba<sup>2+</sup>  
 2 atoms of P PO<sub>4</sub><sup>3-</sup>  
 8 atoms of O Ba<sup>2+</sup> PO<sub>4</sub><sup>3-</sup>  
 Ba<sup>2+</sup> PO<sub>4</sub><sup>3-</sup>

A coefficient multiplies by all the atoms in the molecule beside it

3C 3 atoms C

2H<sub>2</sub>O 4 atoms H H<sub>2</sub>O  
 2 atoms O H<sub>2</sub>O

3FeSO<sub>4</sub> 3 atoms Fe FeSO<sub>4</sub>  
 3 atoms S FeSO<sub>4</sub>  
 12 atoms O FeSO<sub>4</sub>

4Cu(NO<sub>3</sub>)<sub>2</sub> 4 Cu Cu(NO<sub>3</sub>)<sub>2</sub>  
 8 N Cu(NO<sub>3</sub>)<sub>2</sub>  
 24 O Cu(NO<sub>3</sub>)<sub>2</sub>  
 Cu(NO<sub>3</sub>)<sub>2</sub>

## More Balancing and Reactions

What is ?

→ skeleton equation-

How do you recognize?

→ a balanced equation-

## How to Balance a Chemical Reaction:

1. Write the skeletal equation.
2. Count the number of atoms of each type in the reactants & in the products.
3. Multiply each of the formulas by the appropriate coefficients to balance the numbers of atoms.

\*Make sure coefficients are reduced if they need to be\*

### Example 2:

Step 1: magnesium + nitric acid  $\rightarrow$  hydrogen gas + magnesium nitrate

What is the balanced chemical equation for the reaction:

Step 2:  $\rightarrow \text{Mg} + 2\text{HNO}_{3(\text{aq})} \rightarrow \text{H}_2 + \text{Mg}(\text{NO}_3)_2$

Step 3:

Reactants		Types of Atoms		Products
$\text{Mg} + \text{HNO}_3$ $\text{HNO}_3$	<del>2</del> <del>6</del> <del>2</del>	<del>1</del> - Mg - 1 <del>1</del> - N - 2 <del>3</del> - O - 6 <del>1</del> - H - 2	<del>1</del> <del>2</del> <del>6</del> <del>2</del>	H H Mg NO <sub>3</sub> NO <sub>3</sub>

Step 4:

Write the equation with coefficients



- Copy the following  
into your notebook & balance each:

